

**Spellman Detention Basin  
 Houston, Texas**

**Figure 4:  
 Project Design Elements  
 and Aquatic Features**

**LEGEND**

**DESIGN ELEMENTS**

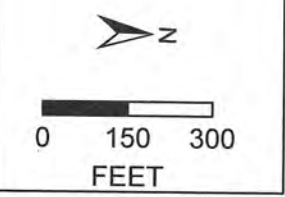
- PROPOSED DETENTION BASIN
- PROPOSED CULVERT
- CONSTRUCTION ACCESS ROAD
- 15' MAINTENANCE BERM
- RIPRAP
- WEIR
- ROCK FILTER DAM

**AQUATIC FEATURES**

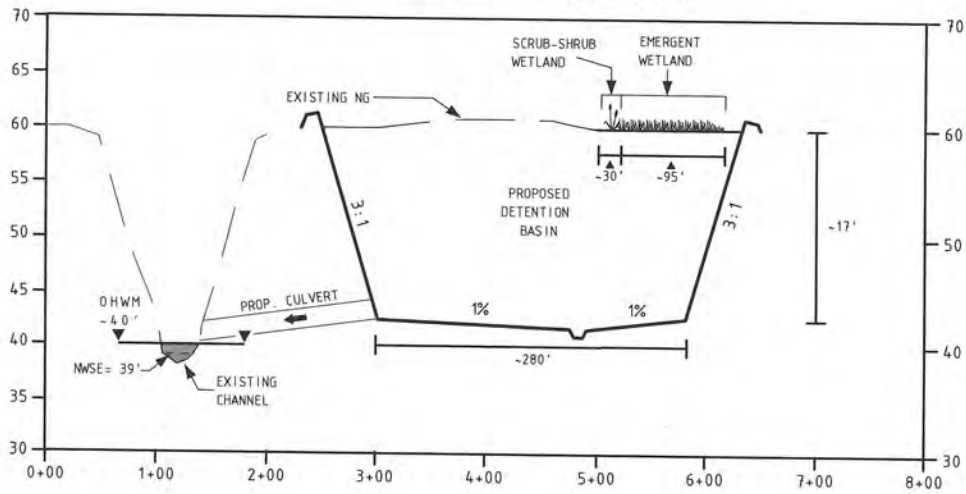
- EMERGENT WETLAND (EW)
- SCRUB-SHRUB WETLAND (SSW)
- EXISTING CHANNEL

Source: Nearmap 2019 Aerial

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**PRELIMINARY BASIN CROSS SECTION A-A**



**NOTES:**

1. PROJECT IS IN PRELIMINARY PLANNING PHASE. ELEVATIONS SHOWN ARE BASED ON LIDAR 2008 HGAC. SURVEY HAS NOT BEEN PERFORMED TO VERIFY ELEVATION.
2. BASIN IS INTENDED TO BE DESIGNED AS DRY BOTTOM BASIN.
3. SEE ADDITIONAL FIGURES FOR DETAILED DESCRIPTION OF PROPOSED CULVERT.
4. DUE TO THE HOMOGENEITY AND LINEAR NATURE OF THE EXISTING CHANNEL, THE OHWM OF THE EXISTING CHANNEL WAS APPROXIMATED FROM RECENT AERIAL IMAGERY AND LIDAR 2008 HGAC.

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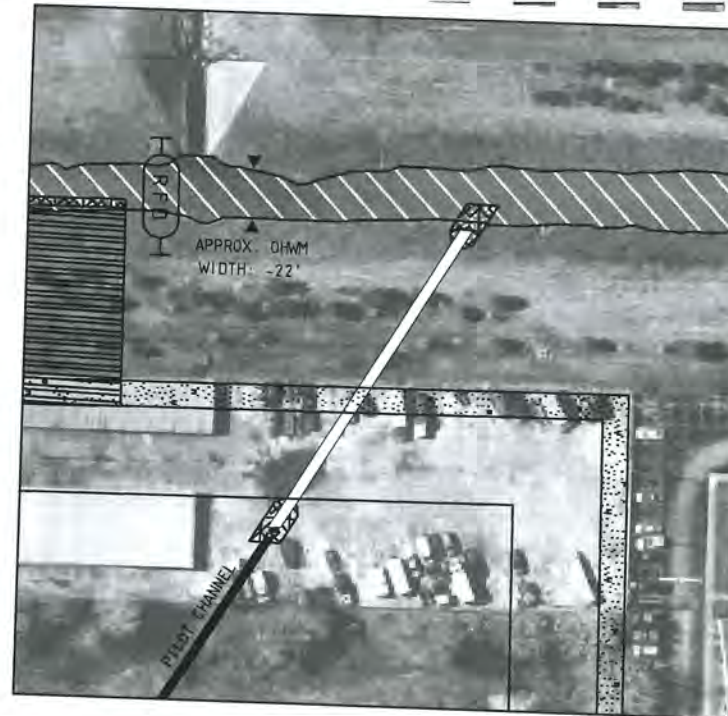
**NOTES:**

1. PROJECT IS IN PRELIMINARY PHASE. ELEVATIONS SHOWN ARE BASED ON LIDAR 2008 HGAC. SURVEY HAS NOT BEEN PERFORMED TO VERIFY ELEVATION.

2. INSTALL RIPRAP EROSION PROTECTION IN GRASS LINED CHANNELS AND DETENTION BASINS FOR ANY SIZE STORM SEWER PIPE OUTFALL, DIMENSIONED AS SHOWN IN "TYPICAL STORM SEWER OUTFALL STRUCTURE LAYOUT."

3. FILL RIPRAP VOIDS AND BURY RIPRAP A MINIMUM OF 6 INCHES WITH TOPSOIL ON SIDE SLOPE AS DIRECTED BY THE ENGINEER.

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





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**Figure 5:  
 Outfall Detail Map**

**LEGEND**

**DESIGN ELEMENTS**

-  PROPOSED DETENTION BASIN
-  PROPOSED CULVERT
-  15' MAINTENANCE BERM
-  RIPRAP
-  WEIR
-  ROCK FILTER DAM

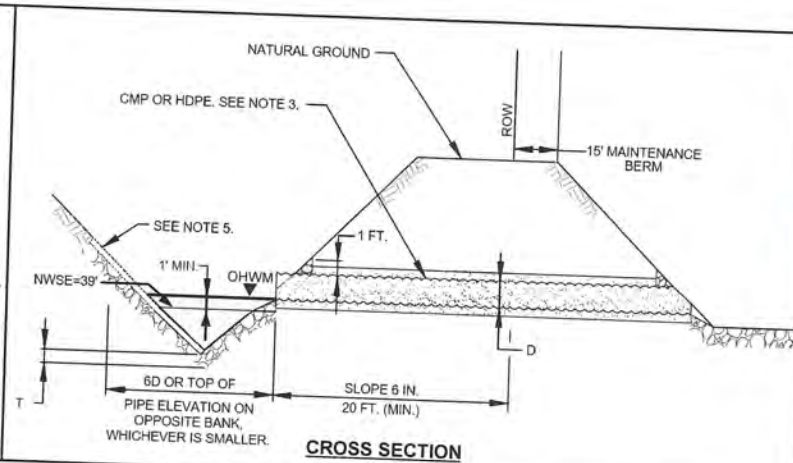
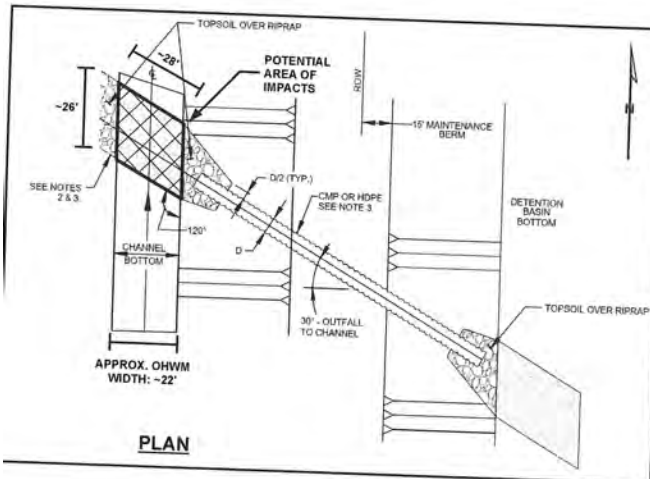
**AQUATIC FEATURES**

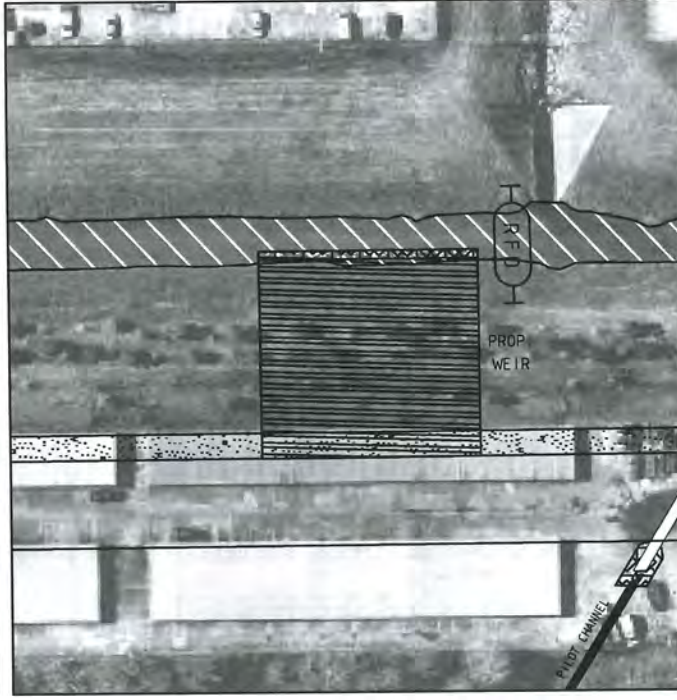
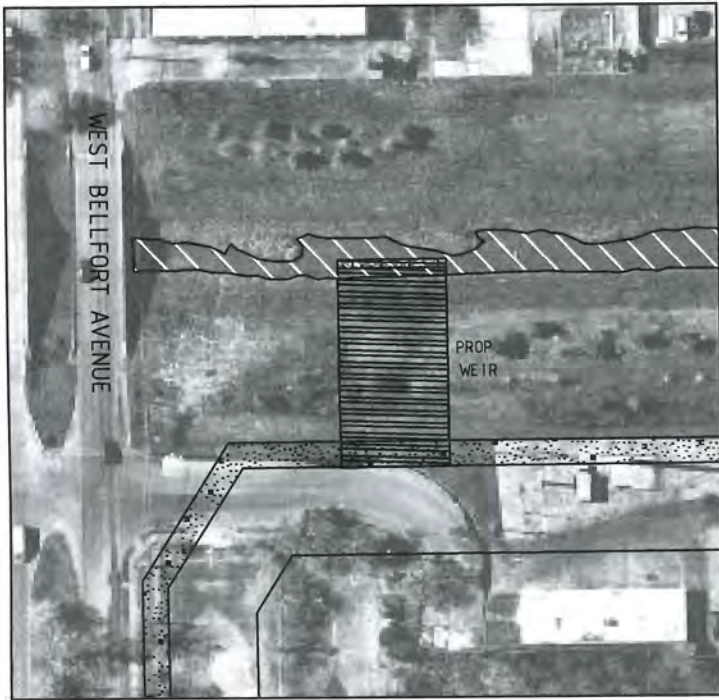
-  APPROXIMATE OHWM OF THE EXISTING CHANNEL

Source: Nearmap 2019 Aerial



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


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**Figure 6:  
 Weir Detail Map**

**LEGEND**

**DESIGN ELEMENTS**

-  PROPOSED DETENTION BASIN
-  PROPOSED CULVERT
-  15' MAINTENANCE BERM
-  RIPRAP
-  WEIR
-  ROCK FILTER DAM

**AQUATIC FEATURES**

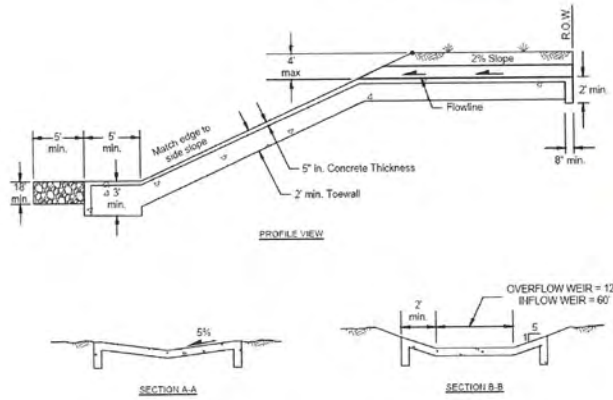
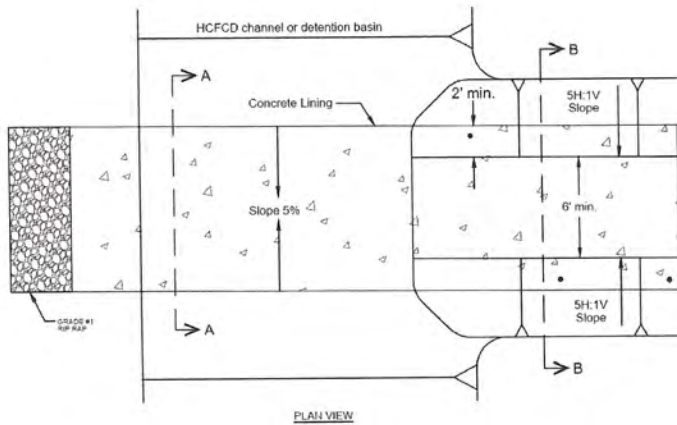
-  APPROXIMATE OHWM OF THE EXISTING CHANNEL

Source: Nearnmap 2019 Aerial

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**Attachment B – Project Design and Required Figures**

After considering several options based on hydrologic and hydraulic modeling, the Spellman Detention basin was chosen as the most effective and cost-efficient approach. The preliminary design for this project consists of seven major design components: the detention basin, the outfall structure, the maintenance berm, the inflow weir, the outflow weir, the temporary rock filter dam, and the temporary coffer dam. A plan view exhibit of these design elements is shown in **Attachment B, Sheet C-2**. Proposed work and impacts within waters of the United States is shown in **Figure 4**.

Reason for Discharge in to waters of the U.S.:

Construction of the detention basin would primarily consist of excavation and grading activities below the elevation of the existing wetlands. This grading may be considered discharge of fill material. Permanent impacts to the aquatic features onsite would consist of loss of 0.91-acre of emergent wetland and 0.20-acre of scrub-shrub wetland. The detention basin would be a dry basin with a vegetated earthen bottom. Appurtenant structures associated with the detention basin include the drainage culvert pipes and outfall, inflow weir, and overflow weir. Rock riprap would be placed below the drainage culvert outfall. Approximately 0.007-acre (289 square feet) of rock riprap for erosion protection would be placed below the ordinary high water mark in the Fondren Diversion Channel at the culvert outfall. A portion of the concrete components of the inflow weir and overflow weir would be placed below the OHWM within the Fondren Diversion Channel. This permanent fill would total 0.019-acre (833 SF). Rock riprap would be placed below the concrete weirs for stability and to prevent erosion. The rock riprap below the weirs would total 0.022-acre (965 SF). A temporary rock filter dam would be constructed within the Fondren Diversion Channel downstream of all construction in order to capture sediments. The total area of the rock filter dam below the OHWM of the Fondren Diversion Channel totals 0.010-acre (450 SF). A temporary earthen coffer dam would be placed upstream of all construction in order to divert ordinary flows. A temporary earthen coffer dam below the OHWM of the Fondren Diversion Channel is proposed to establish a dry working condition to pour the concrete (for the weir structures). The specific materials and dimensions of the temporary coffer dam would be determined by the means and methods of the contractor.

The types of material being discharged and the amount of each type in cubic yards is found in Box 21 of the ENG 4345 form. Proposed direct impacts to waters of the United States are summarized in **Table 1**.

**Table 1: Proposed Direct Impacts to Waters of the United States**

Waterbody Type	Permanent		Temporary	
	Acres	Linear Feet	Acres	Linear Feet
Emergent Wetland	0.91	---	0	---
Scrub-shrub Wetland	0.20	---	0	---
Forested Wetland	0	---	0	---
Perennial Stream	0	0	0	0
Intermittent Stream	0.071	404	0.010*	15*
Ephemeral Stream	0	0	0	0
Impoundment	0	---	0	0
Other:	0	0	0	0
<b>Total:</b>	<b>1.181</b>	<b>0</b>	<b>0.010*</b>	<b>15*</b>

\*Does not include values for temporary earthen coffer dam.